

## PATENT ABSTRACTS OF JAPAN

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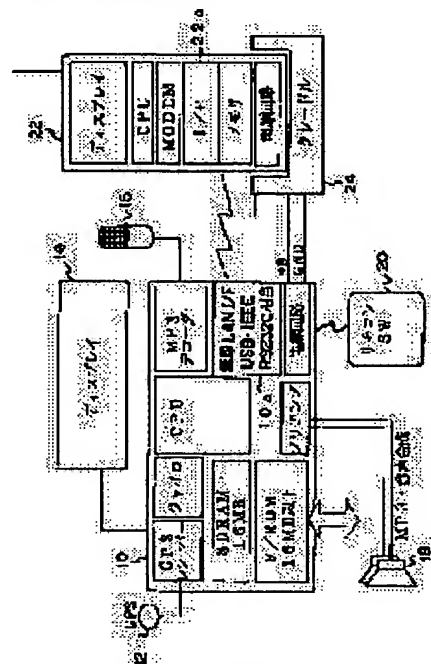
(72)Inventor : SEKIYAMA HIROAKI

## (54) PORTABLE TERMINAL EQUIPMENT AND ON-VEHICLE INFORMATION PROCESSOR

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide efficient navigation by combining portable terminal equipment with an on-vehicle information processor.

**SOLUTION:** Portable terminal equipment 22 has a communication function and is coupled with an on-vehicle information processor 10 when the equipment 22 is set on a cradle 24. The equipment 22 transmits a destination to an information center, displays obtained route data on a display 14, outputs guidance voices from a loudspeaker 18 by supplying the data to the processor 10. When a user arrives the vicinity of the destination, the processor 10 supplies map data about the destination and its vicinity to the equipment 22. The user can reach the destination by referring to the map of the destination and its vicinity displayed on the display 14 when the user carries the equipment 22 after removing the equipment 22 from the cradle 24.



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**CLAIMS**

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**[Claim(s)]**

[Claim 1] The pocket mold terminal unit characterized by to have the control means which displays data on said display means based on the data supplied from said mounted machine in an integrated state when dissociated with said mounted machine, while performing different data transmission and reception from a bidirectional data-communication means, a display means which can display an alphabetic character and image information, and a storage means memorize data according to association/separation condition with a mounted machine.

[Claim 2] It is the pocket mold terminal unit characterized by said bidirectional data communication means acquiring map data from an information centre in equipment according to claim 1.

[Claim 3] A mounted information processor characterized by having a connecting means linked to a pocket mold terminal unit according to claim 1, and a processing means to process based on data supplied from said pocket mold terminal unit.

[Claim 4] It is the mounted information processor which has further a location detection means to detect the current position of a self-vehicle, in equipment according to claim 3, and is characterized by said processing means performing a navigation function based on data supplied from the detected current position and said pocket mold terminal unit.

[Claim 5] It is the mounted information processor which has a voice input means and a voice output means further in equipment given in either of claims 3 and 4, and is characterized by said processing means outputting sound data supplied from said pocket mold terminal unit while transmitting a sound inputted from said voice input means to an information centre through said pocket mold terminal unit from said voice output means.

[Claim 6] A mounted information processor characterized by having further a power source which supplies power to said pocket mold terminal unit in equipment according to claim 3 to 5.

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## DETAILED DESCRIPTION

## [Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to offer of the information which used the mounted information processor especially the mounted machine, and the pocket mold terminal.

[0002]

[Description of the Prior Art] Before, the various systems to offer information for cars using a computer are proposed. For example, the computer system for cars which becomes a \*\*\*\*\* No. 500084 [ 11 to ] official report from a face plate module, a support module, and a computer module is indicated. A face plate module has a digital signal processor, and is constituted free [ removal ]. A face plate module functions also as a cellular phone by using CODEC which has an AM/FM tuner, a display, a keypad, and CODEC, and could operate as a portable radio, and built in the loudspeaker and the microphone. Furthermore, reception of paging information and acquisition of a voice note can also be performed. In addition, a face plate module supplies electric power according to an independent power source like a cell, while having removed.

[0003]

[Problem(s) to be Solved by the Invention] However, with the above-mentioned conventional technique, the face plate module functioned as a navigation system, when combined with a computer module, but when it removed, and the function as navigation was lost, for example, a user carried a face plate module, separated from a car and it went to the destination on foot, there was a problem which cannot display the map data which a user needs.

[0004] while this invention is made in view of the technical problem which the above-mentioned conventional technique has and the purpose makes having two incomes with a mounted machine and a pocket mold terminal much more functional — more — user FUREN — it is in offering the equipment which can offer a dolly navigation function.

[0005]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, the pocket mold terminal unit of this invention While performing different data transmission and reception from a bidirectional data communication means, the display means which can display an alphabetic character and image information, and a storage means to memorize data according to association/separation condition with a mounted machine When dissociating with said mounted machine, it is characterized by having the control means which displays data on said display means based on the data supplied from said mounted machine in the integrated state.

[0006] Moreover, the pocket mold terminal unit of this invention is characterized by said bidirectional data communication means acquiring map data from an information centre.

[0007] Moreover, the mounted information processor of this invention is characterized by having a connecting means linked to said pocket mold terminal unit, and a processing means to process based on the data supplied from said pocket mold terminal unit.

[0008] Moreover, the mounted information processor of this invention has further a location detection means to detect the current position of a self-vehicle, and said processing means is characterized by performing a navigation function based on the data supplied from the detected current position and said pocket mold terminal unit.

[0009] Moreover, the mounted information processor of this invention has a voice input means and a voice output means further, and said processing means is characterized by outputting the sound data supplied from said pocket mold terminal unit from said voice output means while it transmits the sound inputted from said voice input means to an information centre through said pocket mold terminal unit.

[0010] Moreover, the mounted information processor of this invention is further characterized by having the power source which supplies power to said pocket mold terminal unit.

[0011] In this invention, when a pocket mold terminal unit and a mounted information processor are in a separation condition, data transmission and reception are performed with an information centre etc. as a pocket mold terminal unit independent function. In including both means to perform the communication link with the means and the mounted information processor which perform the communication link with a remote place in a bidirectional data communication means and functioning on it independently, it performs data transmission and reception the information centre of a remote place, etc. and predetermined. Moreover, in the condition of having combined with the mounted information processor, since the function which a mounted information processor has can be used, more advanced data transmission and reception are performed. The data acquired from the information centre etc. using the two-way communication means are supplied to a mounted information processor, and predetermined

processing is performed. Moreover, the data is displayed on a pocket mold terminal unit. For example, when acquiring map data from an information centre etc. and performing navigation, a pocket mold terminal unit functions as a navigation screen which displays map data and a guidance path. It arrives near the destination, and when leaving a car and going to the destination, a pocket mold terminal unit is separated from a mounted information processor. In this case, since required data are supplied from mounted information treatment equipment in an integrated state, it can arrive at the destination certainly only with a pocket mold terminal unit. Moreover, where a pocket mold terminal unit is combined with a mounted information processor, since power is supplied from a mounted information processor, the power failure at the time of carrying is also prevented.

[0012]

[Embodiment of the Invention] Hereafter, the operation gestalt of this invention is explained based on a drawing.

[0013] The system configuration Fig. in the condition that the pocket mold terminal unit and the mounted information processor joined together is shown in drawing 1.

[0014] The mounted information processor 10 is constituted including a GPS receiver, a gyroscope, SDRAM (synchronous DRAM16MB), a flash ROM (16MB or more) or a hard disk, CPU, pre amplifier, an MP3 decoder, interface I/F10a, and a power circuit.

[0015] A GPS receiver receives the signal from the GPS antenna 12, detects the current position of a car, and supplies CPU.

[0016] A gyroscope detects bearing of a car and supplies it to CPU. In addition, with the vehicle speed, detected bearing is used in order to detect the relative displacement of the car from a predetermined location, and it detects the current position of a car with high precision based on the location data obtained by GPS, and this relative displacement data.

[0017] An MP3 decoder restores to MP3, i.e., the voice data compressed in the data compression format of MPEG1. The pocket mold terminal unit 22 acquires MP3 data for example, by the Internet course, and supplies them to the mounted information processor 10.

[0018] Interface I/F10a corresponds to other USB specification of wireless, RS232C specification, RS232E specification, and IEEE1394 specification, and performs data transmission and reception with the pocket mold terminal unit 22. The communication link with the mounted information processor 10 of the pocket mold terminal unit 22 is attained by setting to the cradle 24 connected to interface I/F10a. In addition, a cradle 24 is connected also with the power circuit of the mounted information processor 10, and when the pocket mold terminal unit 22 is set to a cradle 24, power is supplied and it charges (in drawing, +B shows power-source Rhine).

[0019] CPU detects that the pocket mold terminal unit 22 was set to the cradle 24, and the pocket mold terminal unit 22 joined together, and it supplies the processed data to the pocket mold terminal unit 22 side through I/F10a and a cradle while it processes the data supplied from the pocket mold terminal unit 22. When map data are supplied from the pocket mold terminal unit 22, a navigation function is performed based on the current position detected with the GPS receiver or the gyroscope. Here, the processing which searches for the path which reaches the set-up destination, and the function guided with a display or voice in accordance with the path searched for and acquired are included in a navigation function. Moreover, offer of the information on the path searched for and acquired, the facility information on the path circumference, and the information concerning the destination further is also included. Moreover, when a microphone 16 and a loudspeaker 18 are connected to the mounted information processor 10, while supplying the voice data inputted from the microphone 16 to the pocket mold terminal unit 22, the voice data supplied from the pocket mold terminal unit 22 is outputted from a loudspeaker 18. Although the voice data inputted from the microphone 16 may be supplied as it is, voice may be recognized by CPU and a recognition result may be supplied. When MP3 data are supplied from the pocket mold terminal unit 22, it gets over by the MP3 decoder and music data are outputted from a loudspeaker 18. Moreover, it is also possible to supply other audio equipment etc. by outputting from the output terminal which does not illustrate the music data to which it restored. In addition, a display 14 can also be further added to the mounted information processor 10. However, the main display screen of the mounted information processor 10 is in the personal digital assistant equipment 22 side, and the data processed and obtained with the mounted information processor 10 are supplied to the pocket mold terminal unit 22, and are displayed on the display of the pocket mold terminal unit 22.

[0020] On the other hand, the pocket mold terminal unit 22 is constituted including a power circuit, interface I/F22a, MODEM, CPU, a display, an antenna, and memory.

[0021] A power circuit supplies power to CPU etc. including a rechargeable battery. In addition, as mentioned already, a rechargeable battery is charged by the power from the mounted information processor 10, when it sets to a cradle 24 and combines with mounted information treatment equipment 10.

[0022] Interface I/F22a can perform interface I/F10a by the side of mounted information treatment equipment 10, and data transmission and reception, and can be considered as the interface corresponding to wireless, USB specification or RS232C specification, RS232E specification, and IEEE1394 specification. Voice data may be sent and received although the communication link between the pocket mold terminal unit 22 and the mounted information processor 10 is fundamentally performed by digital data. That is, it is suitable to have the change-over function of data communication and voice communication. TCP/IP can be used for the protocol of a digital data communication link.

[0023] MODEM changes into digital data the data of the voice data format acquired from the information centre etc. through the antenna while changing into voice data the digital data supplied from the mounted information processor 10. The acquisition data changed into the digital data are supplied to CPU or the mounted information processor 10.

[0024] CPU detects that the pocket mold terminal unit 22 was set to the cradle 24, and combined with the mounted information processor 10, and stores in memory the data supplied from the mounted information processor 10 while supplying the data acquired from the information centre etc. to the mounted information-processor 10 side, or transmits them to an information centre through MODEM and an antenna. In addition, although not shown in drawing, the pocket mold terminal unit 22 has a microphone and a loudspeaker like the usual cellular phone, and if independent, it can function also as a cellular phone in which the message by the usual telephone line is possible.

[0025] A display 14 displays the data which were supplied from the mounted information processor 10 and memorized by memory while displaying the data acquired from the information centre. In the condition of dissociating from the mounted information processor 10, the data which are supplied from an information processor 10 before separation (i.e., joint information), and are memorized by memory are displayed.

[0026] In such a system configuration, the processing in the case of performing a navigation function is explained.

[0027] The system concept Fig. by the side of the information centre which communicates with the pocket mold terminal unit 22 shown in drawing 1 is shown in drawing 2. An information centre is constituted including two or more servers and databases, unifies the data corresponding to a demand of a user, and provides a user with them.

[0028] The client agent server 100 is a server which manages a user's individual humanity news etc., and is the run state (vehicle speed and current position) of a car, and a user's individual humanity news (ID, Password PASS, and the request information from a user are processed.). The client agent server 100 has the client databases D/B for specifying a user.

[0029] When the demand from a user (client) is sent in a voice data format, the speech recognition server 108 interprets this voice data, and supplies an interpretation result to the client agent server 100. The speech recognition server 108 has a speech recognition engine, a sentential calculus engine, and the lexical databases D/B, in order to perform this processing.

[0030] Pin center, large NABIENJIN 102 offers data required for navigation, and the path data which searched for the path which specifically reaches map data and the destination, and were obtained.

[0031] The Internet is accessed and an email server 104 manages transmission and reception of an electronic mail.

[0032] Contents database D/B112 memorizes various kinds of facility information and event information, and news information, and supplies them to the contents integrated engine 101. Map database D/B114 has a map drawing database for a display, and path planning lot Fig. data, and supplies these data to the contents integrated engine 101.

[0033] The speech synthesis server 110 has a speech synthesis engine and speech synthesis database D/B, and when providing a user with information with voice, it supplies required voice data to the contents integrated engine 101.

[0034] The contents integrated engine 101 unifies the path data which reach the map data demanded by the user and the destination, facility information and event information, news information, and electronic mail information, and provides a user with them as digital data or voice data.

[0035] In addition, the external content provider 106, the out source agent server 116, the external center 118, the broadcast media 120, and the traffic information offer media 122 are for offering the various information which an external engine has, for example, land-based digital broadcasting, and a radio broadcasting.

[0036] Hereafter, processing of this operation gestalt is explained to a detail using drawing 3 and drawing 4.

[0037] The situation [ information centre / the pocket mold terminal unit 22 in the case of performing navigation and ] of data transmission and reception is shown to drawing 3 and drawing 4 by time series. In addition, the pocket mold terminal unit 22 is in the condition which it was set to the cradle 24 and combined with the mounted information processor 10. First, if the pocket mold terminal unit 22 is set to a cradle 24, CPU of mounted information treatment equipment 10 or CPU of the pocket mold terminal unit 22 will detect an integrated state, and a user's ID and Password PASS which are memorized by F/ROM of the mounted information processor 10 will be transmitted to an information centre using the telephone function of personal digital assistant equipment 22. In addition, it is suitable to transmit the information (for the integrated state to be called "NAVI NET mode for convenience by a diagram) which shows that it has combined with the communication link status or the mounted information processor 10 in this case. In the information centre which received these data, user ID and Password PASS are collated, and the electronic mail addressed to a user, event information, news, etc. are unified, and a letter is answered. The pocket mold terminal unit 22 which received the data from an information centre supplies the data received to the mounted information processor 10. The mounted information processor 10 outputs the data from the pocket mold terminal unit 22 from a loudspeaker 18. For example, "hello, the data outputted are Mr. \*\*. A delicious store and inexpensive information are added. It is " etc. about demand pleasing.

[0038] If a user inputs from "a delicious store" and a microphone 16 to such a voice output, the mounted information processor 10 will supply a user's input voice data to the pocket mold terminal unit 22. The pocket mold terminal unit 22 transmits this voice data to an information centre. In the information centre which received this requested data, the contents of the demand are analyzed by speech recognition, and the data corresponding to the contents of the demand are searched and a letter is answered. In addition, it is suitable to answer a letter in data to that effect during retrieval, and to output the message of "a delicious store being made into the destination and searching a path" etc. from a loudspeaker 18. And when retrieval is completed, a letter is answered in the completion data of retrieval. With this operation gestalt, three kinds of paths to the destination existed, and have asked [ these three any are chosen and ] the user first. The data of a question answer a letter with alphabetic data or voice data. Alphabetic data is displayed on the display of the pocket mold terminal unit 22. By a diagram, it is

displayed that “to “recommended road” reach early anyhow” turnpike is not used.” Voice data was outputted to the loudspeaker 18 of the mounted information processor 10, for example, carried out the completion of “retrieval. It is outputted saying to which of the path which is not used he does a recommended road, the shortest time amount path, and a turnpike” etc.

[0039] When a user inputs taste of “wanting to reach early anyhow” from a microphone 16 to such a voice output and a display, or when the number which corresponds from the keypad of the pocket mold terminal unit 22 is inputted, the pocket mold terminal unit 22 transmits these taste data to an information centre. An information centre is searched for the path which recognizes the transmitted voice data or corresponds based on information data. Path planning is performed based on the taste which the user chose, traffic information, and event information, and answers a letter in the obtained path data. As path data which answer a letter, they are specifically all root data, the map data near a their present location, guidance crossing data, guidance voice data, facility information data, event information data, etc. In addition, the first car present location can be transmitted to ID, a password, the communication link status, and the notice of integrated state mode and coincidence. The pocket mold terminal unit 22 which received path data is supplied to the mounted information processor 10. The mounted information processor 10 superimposes the guidance path to the destination, supplies it to personal digital assistant equipment 22, and is displayed on a display 14 while it superimposes map data on the car current position detected with GPS or a gyroscope. In addition, when the pocket mold terminal unit 22 has sufficient memory and processing speed, the current position data of a car may be processed by reception and self from the mounted information processor 10, and the current position and the guidance path may be indicated by superposition on map data. And the mounted information processor 10 collates a guidance path and the current position serially, determines the timing of a voice output, and shows around from a loudspeaker 18, saying “it is right-turn about the next crossing” etc. Moreover, while performing such navigation, the mounted information processor 10 supplies the transit status, current position (vehicle speed etc.) data, etc. of a car to every predetermined time (or predetermined mileage) at the pocket mold terminal unit 22, and the pocket mold terminal unit 22 transmits these data to an information centre. These data are used in order to grasp a user's transit situation by the information centre side.

[0040] When change arises in the situation which will be grasped by the information centre side by the time a user arrives at the destination (for example, when accident and delay occur on a path), as for an information centre, the pocket mold terminal unit 22 is newly provided with event information. When a user demands a new path, that is inputted from a microphone 16, or it inputs and transmits from the keypad of the pocket mold terminal unit 22. An information centre searches for a new path according to this transmission, and answers a letter in the acquired path. The pocket mold terminal unit 22 displays a new path on a display while it supplies the reply data from an information centre to the mounted information processor 10 and carries out a voice output to “I guide a new path” etc. from a loudspeaker 18.

[0041] And when having arrived near the destination was detected from a guidance path and a its present location, the mounted information processor 10 arrived at the parking lot near “destination from the loudspeaker 18. It is on foot about 2 minutes to a store. today's recommendation — an open sea — it is the bowl of 1500 yen — it outputs with “ etc. and a user is guided. The information on the duration from a parking lot to a store, the menu of a store, etc. is included in the data answered from the information centre, and by making to have arrived at the parking lot into a trigger, the mounted information processor 10 reads this data from memory, and outputs it.

[0042] Moreover, CPU of the mounted information processor 10 supplies the data (a menu and photograph data of a store) of the store concerned to the pocket mold terminal unit 22 at map data and path data near [ concerned ] the store, and a list while outputting such guidance. The pocket mold terminal unit 22 memorizes in memory the data supplied from the mounted information processor 10, and displays map data on a display 14. Thereby, a user removes and carries the pocket mold terminal unit 22 from a cradle 24, and he can reach easily to the target store, looking at the map displayed on the display 14. When GPS equipment is added to the pocket mold terminal unit 22, it can arrive at the target store still more easily by displaying a self location on map data.

[0043] In addition, although the mounted information processor 10 detects that a its present location is a parking lot near the destination and the map data near the destination are supplied to the pocket mold terminal unit 22 by making this detection into a trigger with this operation gestalt, it is also possible to memorize required map data in memory by ordering the pocket mold terminal unit 22 to have arrived at the parking lot near the destination, and requiring the map data near the destination of an information centre from the pocket mold terminal unit 22.

[0044] Moreover, in case the map data near the destination are supplied to the pocket mold terminal unit 22 from the mounted information processor 10, it is also suitable to supply the current position, i.e., the location from which the user removed the pocket mold terminal unit 22, to coincidence. What (a parking location is displayed on a map) this also offers the path at the time of a user returning from the target store to his own car for becomes possible.

[0045] Moreover, when the parking lot near the destination is a basement car park, while supplying the map data near the destination, it is suitable to also make the memory of the pocket mold terminal unit 22 memorize the parking location data into which it asked with voice to the user and the user inputted the detailed parking location from the microphone 16. Thereby, a user can return to a self car more certainly.

[0046] Moreover, although considered as the condition that the mounted information processor 10 and the pocket mold terminal unit 22 were combined by setting the pocket mold terminal unit 22 to a cradle 24, with this operation gestalt, when the ignition key of a car is made into an ACC ON state, it can carry out to an integrated state, i.e., the condition of performing data transmission and reception between the mounted information processor 10 and the pocket mold terminal unit 22, and can also consider as the separation condition function only with the pocket mold

terminal unit 22, in an ACC OFF state. Since the data (it mentioned already with this operation gestalt like "NAVI NET mode") which are in the condition combined with the mounted information processor 10 are not transmitted to an information centre in the state of separation, in an information centre, a letter will be answered in the data according to a separation condition. For example, they are news data, electronic mail data, path data for navigation that do not use voice. Although the pocket mold terminal unit 22 functions as a usual cellular phone in the separation condition, it can also function also in the condition of having set to the cradle 24, as a cellular phone (the so-called hand free telephone) which used the microphone 16 and loudspeaker 18 of the mounted information processor 10.

[0047]

[Effect of the Invention] according to [ as explained above ] this invention — having two incomes with a mounted machine and a pocket mold terminal — a pocket mold terminal — effective — using it — more — user FUREN — a dolly navigation function can be offered.

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**DESCRIPTION OF DRAWINGS**

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**[Brief Description of the Drawings]**

[Drawing 1] It is the system configuration Fig. of the operation gestalt of this invention.

[Drawing 2] It is the information centre side concept block diagram of the operation gestalt of this invention.

[Drawing 3] It is the processing explanatory view (the 1) of the operation gestalt of this invention.

[Drawing 4] It is the processing explanatory view (the 2) of the operation gestalt of this invention.

**[Description of Notations]**

10 A mounted information processor (mounted machine), 22 Pocket mold terminal unit.

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[Translation done.]



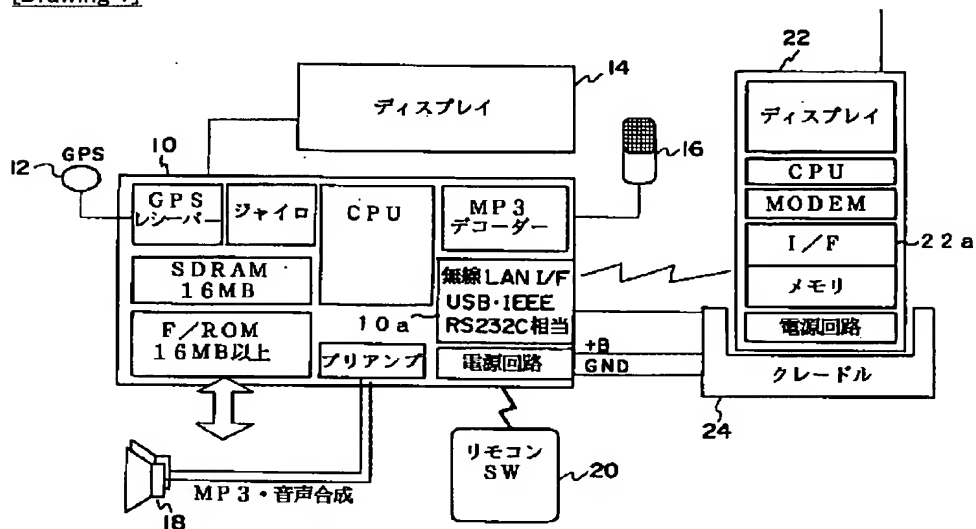
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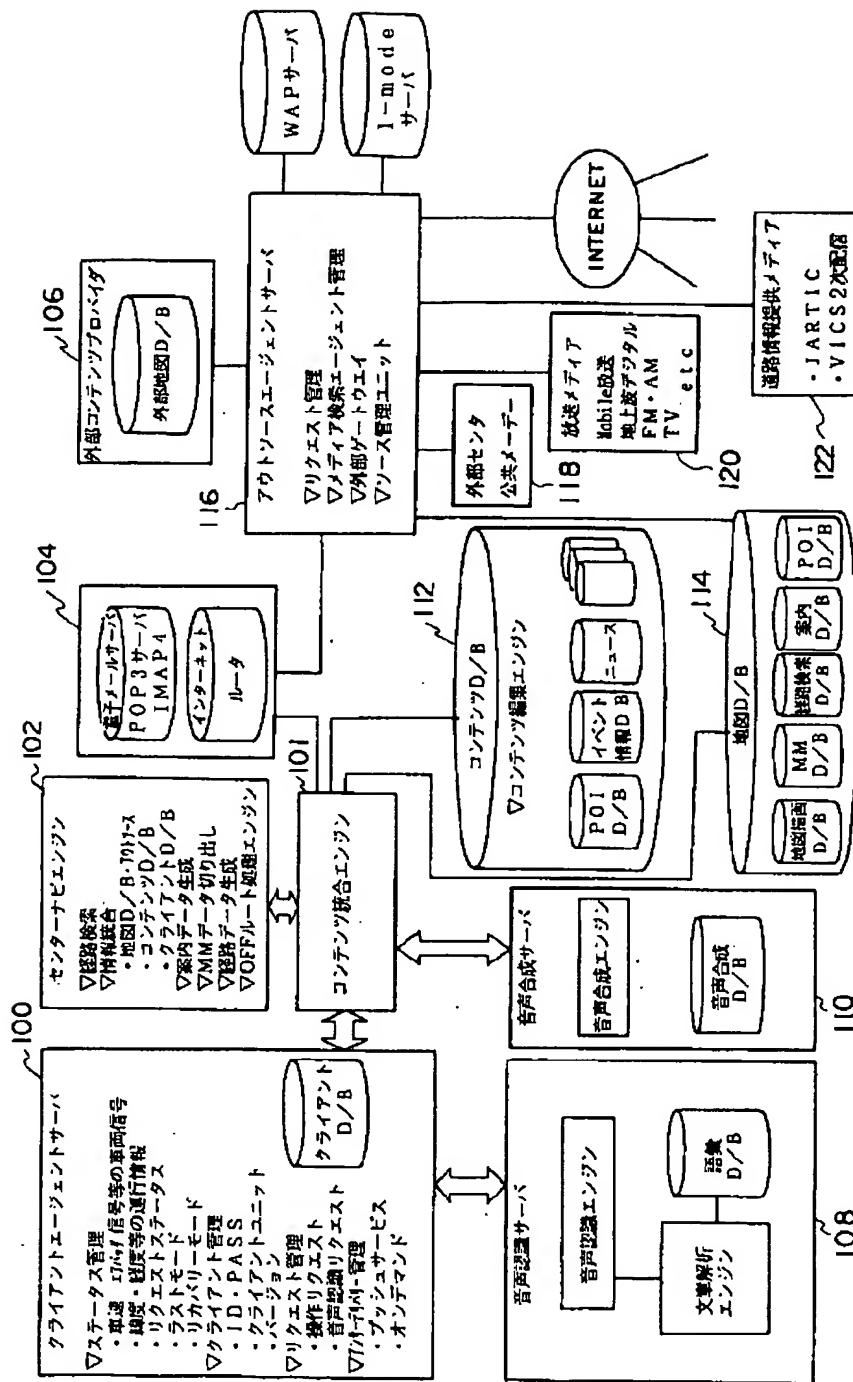
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## DRAWINGS

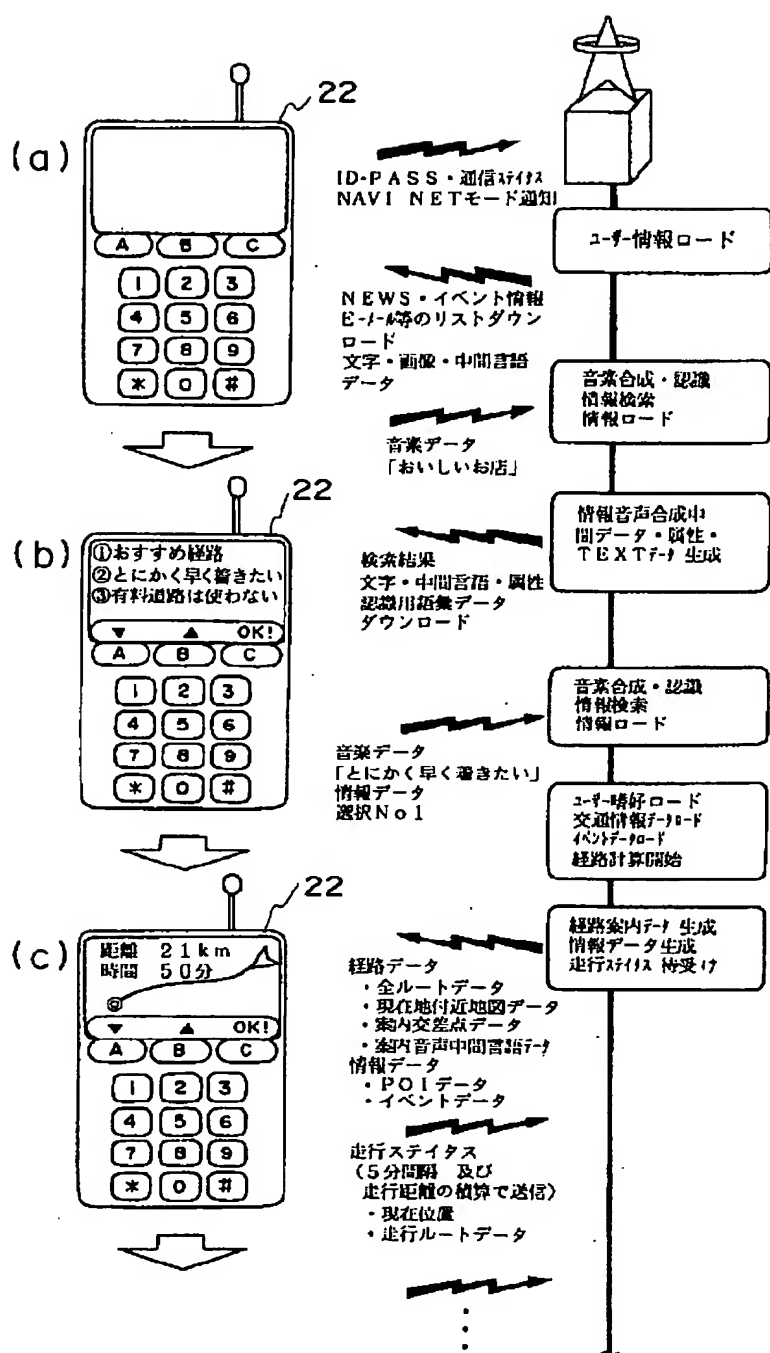
[Drawing 1]



[Drawing 2]



[Drawing 3]

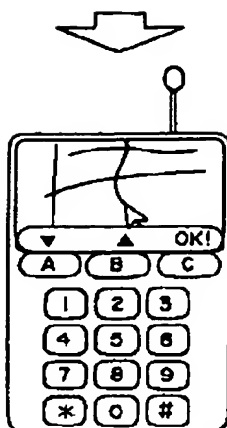


[Drawing 4]

(a)

イベント発生  
 ・ 交通状況変化による  
 経路情報の変更が  
 生じた場合  
 ・ 他の情報  
 ・ 現在地付近のイベント  
 ・ 関連最新情報

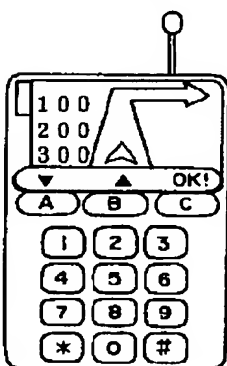
OK!  
 コマンドデータ  
 or  
 音楽データ



(b)

新しい経路をご案内  
 致します。

次の「〇〇〇」が  
 見える交差点を右に  
 曲がって下さい。

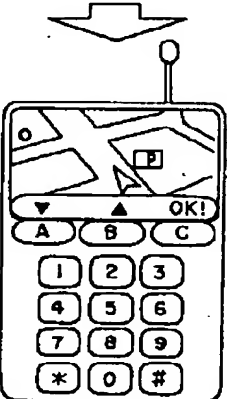


(c)

目的地付近の駐車場  
 に到着しました。

お店まで徒歩約2分  
 です。

今日のおすすめは  
 大盛り1500円  
 です。



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